

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Previously Presented) An apparatus that induces emotions based on detection of biosignals from a body of a user and on emotion induction protocols that selectively control visual, auditory, olfactory and tactile stimuli, comprising:

an emotion induction module that selects from a plurality of emotion induction protocols an emotion induction protocol configured to induce a desired emotion selected by the user, extracts one or more bioparameters from the biosignals, and changes the emotion induction protocol depending on increase/decrease patterns of the respective extracted bioparameters so as to induce the emotion, wherein each emotion induction protocol is configured to induce a different emotion by combining contents that induce cognitive action of the central nervous system and conditions that induce physiological action of the autonomic nervous system;

a biostimulation module that outputs physical signals that apply the stimuli to the user's body based on the selected emotion induction protocol; and

a biosignal measurement module that detects one or more biosignals from the user's body and outputs them to the emotion induction module before and after the output of the physical signals from the biostimulation module.

2. (Previously Presented) The apparatus as claimed in claim 1, wherein the emotion induction protocols are configured to induce at least two or more of the emotions of pleasure, sadness, anger, fear, disgust and surprise.

3. (Previously Presented) The apparatus as claimed in claim 1, wherein the emotion induction module comprises a bioparameter change model storage unit in which change models for the respective bioparameters by emotional states are stored, an emotion induction protocol storage unit in which the emotion induction protocols configured to induce physiological signals for the emotional states are stored, and an emotion induction control unit that compares the increase/decrease patterns of the respective bioparameters extracted from the biosignals with the bioparameter change models and changes the emotion induction protocols depending on comparison results.

4. (Previously Presented) The apparatus as claimed in claim 3, wherein the conditions that induce physiological action of the autonomic nervous system include illumination, fragrance and temperature/humidity.

5. (Previously Presented) The apparatus as claimed in claim 4, wherein each emotion induction protocol is configured so that the contents and the conditions of illumination, fragrance and temperature/humidity are graded according to the respective bioparameters into various levels in order of a degree to which the contents and the conditions induce an increase pattern of the bioparameters.

6. (Previously Presented) The apparatus as claimed in claim 3, wherein the emotion induction control unit compares the increase/decrease patterns of the respective bioparameters extracted from the biosignals with the bioparameter change models, extracts deviations of the increase/decrease patterns of the respective bioparameters from the bioparameter change models, and checks whether the user has reached the desired emotional state based on the deviations of the increase/decrease patterns of the respective bioparameters.

7. (Previously Presented) The apparatus as claimed in claim 3, wherein if an increase/decrease pattern of only one bioparameter among the bioparameters extracted from the biosignals does not conform to the bioparameter change model, the emotion induction control unit changes a level of the non-conforming bioparameter in the emotion induction protocol.

8. (Previously Presented) The apparatus as claimed in claim 3, wherein if increase/decrease patterns of a plurality of bioparameters among the bioparameters extracted from the biosignals do not conform to the bioparameter change models, the emotion induction control unit changes levels of bioparameters, which are selected according to priorities of changes in the bioparameters, in the emotion induction protocol.

9. (Original) The apparatus as claimed in claim 8, wherein the priorities of changes in the bioparameters are set in order of induction facilitation of the bioparameters for a relevant emotion induction.

10. (Previously Presented) The apparatus as claimed in claim 3, wherein if increase/decrease patterns of all the bioparameters extracted from the biosignals do not conform to the bioparameter change models, the emotion induction control unit changes the contents of the emotion induction protocol.

11. (Original) The apparatus as claimed in claim 1, wherein the physical signals outputted from the biostimulation module stimulate at least one of the visual, auditory, olfactory and tactile senses.

12. (Previously Presented) The apparatus as claimed in claim 1, wherein the biosignal measurement module comprises a sensor unit that detects one or more biosignals from the user's body, and the sensor unit includes a heartbeat detection sensor that detects a heartbeat biosignal from the user's body and a skin resistance sensor that measures skin resistance of the user's body.

13. (Original) The apparatus as claimed in claim 12, wherein bioparameters for the number of heartbeats and a variation of the heartbeat are extracted from the heartbeat biosignal, and a bioparameter for the skin resistance is extracted from a skin resistance biosignal.

14. (Previously Presented) The apparatus as claimed in claim 1, wherein the biosignal measurement module further comprises a signal processing unit that amplifies and filters the detected biosignals, an analog/digital conversion unit that

converts the detected biosignals into digital signals if the detected biosignals are in the form of analog signals, and a radio signal transmitter that converts the digital biosignals outputted from the analog/digital conversion unit into radio signals and transmits the radio signals.

15. (Previously Presented) A method for inducing emotions based on emotion induction protocols that selectively control visual, auditory, olfactory and tactile stimuli, comprising the steps of:

selecting from a plurality of emotion induction protocols an emotion induction protocol configured to induce a desired emotion selected by a user, wherein each emotion induction protocol is configured to induce a different emotion by combining contents that induce cognitive action of the central nervous system and conditions that induce physiological action of the autonomic nervous system;

detecting one or more biosignals from the user's body and extracting one or more bioparameters from the detected biosignals;

outputting physical signals that stimulate the user's body based on the emotion induction protocol configured to induce the selected emotion;

after outputting the physical signals, detecting one or more biosignals from the user's body and extracting one or more bioparameters from the detected biosignals;
and

inducing the emotion by changing the emotion induction protocol based on increase/decrease patterns of the bioparameters extracted from the biosignals.

16. (Previously Presented) The method as claimed in claim 15, wherein the emotion induction protocols are configured to induce at least two or more of the emotions of pleasure, sadness, anger, fear, disgust and surprise.

17. (Previously Presented) The method as claimed in claim 15, wherein the conditions that induce physiological action of the autonomic nervous system include illumination, fragrance and temperature/humidity.

18. (Previously Presented) The method as claimed in claim 17, wherein each emotion induction protocol is configured so that the contents and the conditions of illumination, fragrance and temperature/humidity are graded according to the respective bioparameters into various levels in order of a degree to which the contents and the conditions induce an increase pattern of the bioparameters.

19. (Original) The method as claimed in claim 15, wherein the physical signals stimulate at least one of the visual, auditory, olfactory and tactile senses.

20. (Original) The method as claimed in claim 15, wherein the biosignals include biosignals for heartbeat and skin resistance of the user's body.

21. (Original) The method as claimed in claim 20, wherein bioparameters for the number of heartbeats and a variation of the heartbeat are extracted from the heartbeat biosignal, and a bioparameter for the skin resistance is extracted from the skin resistance biosignal.

22. (Previously Presented) The method as claimed in claim 15, wherein the detected biosignals are amplified and filtered; if the detected biosignals are in the form of analog signals, the step of detecting further comprises the steps of converting the analog biosignals into digital biosignals; and converting the digital biosignals into radio signals and transmitting the radio signals.

23. (Original) The method as claimed in claim 15, wherein the step of inducing the emotion further comprises the steps of comparing the increase/decrease patterns of the extracted respective bioparameters with the respective bioparameter change models, extracting deviations of the increase/decrease patterns of the respective bioparameters from the bioparameter change models, and checking whether the user has reached a desired emotional state based on the deviations of the increase/decrease patterns of the respective bioparameters.

24. (Previously Presented) The method as claimed in claim 18, further comprising the step of, if the user has not reached a desired emotional state, changing the contents or level of the emotion induction protocol.

25. (Previously Presented) The method as claimed in claim 24, wherein the step of changing the contents or level of the emotion induction protocol comprises the step of, if an increase/decrease pattern of only one bioparameter among the bioparameters extracted from the biosignals does not conform to the

bioparameter change model, changing the level of the non-conforming bioparameter in the emotion induction protocol.

26. (Original) The method as claimed in claim 24, wherein the step of changing the contents or level of the emotion induction protocol comprises the step of, if increase/decrease patterns of a plurality of bioparameters among the bioparameters extracted from the biosignals do not conform to the bioparameter change models, changing the levels of bioparameters, which are selected according to priorities of changes in the bioparameters, in the emotion induction protocol.

27. (Original) The method as claimed in claim 26, wherein the priorities of changes in the bioparameters are set in order of induction facilitation of the bioparameters for a relevant emotion induction.

28. (Original) The method as claimed in claim 24, wherein the step of changing the contents or level of the emotion induction protocol comprises the step of, if increase/decrease patterns of all the extracted bioparameters do not conform to the bioparameter change models, changing the contents of the emotion induction protocol.

29. (Previously Presented) The apparatus as claimed in claim 5, wherein if an increase/decrease pattern of only one bioparameter among the bioparameters extracted from the biosignals does not conform to the bioparameter change model,

the emotion induction control unit changes the level of the non-conforming bioparameter in the emotion induction protocol.

30. (Previously Presented) The apparatus as claimed in claim 5, wherein if increase/decrease patterns of a plurality of bioparameters among the bioparameters extracted from the biosignals do not conform to the bioparameter change models, the emotion induction control unit changes the levels of bioparameters, which are selected according to priorities of changes in the bioparameters, in the emotion induction protocol.

31. (Previously Presented) The apparatus as claimed in claim 5, wherein if increase/decrease patterns of all the bioparameters extracted from the biosignals do not conform to the bioparameter change models, the emotion induction control unit changes the contents of the emotion induction protocol.

32. (Previously Presented) The method as claimed in claim 23, further comprising the step of, if the user has not reached a desired emotional state, changing the contents or level of the emotion induction protocol.

33. (New) An apparatus that induces emotions based on receiving biosignals from a body of a user and on emotion induction protocols that selectively control visual, auditory, olfactory and tactile stimuli, comprising:

an emotion induction module that receives a selection for a desired emotion by a user and selects from a plurality of emotion induction protocols an emotion

induction protocol configured to induce the desired emotion, extracts one or more bioparameters from respective biosignal data of the biosignals, and changes the emotion induction protocol depending on increase/decrease patterns of the respective extracted bioparameters so as to induce the desired emotion, wherein each emotion induction protocol is configured to induce a different emotion by combining contents that induce cognitive action of the central nervous system and conditions that induce physiological action of the autonomic nervous system;

a biostimulation module that outputs physical signals to the user to stimulate the user's body with the desired emotion based on the selected emotion induction protocol; and

a biosignal measurement module that receives one or more biosignals from the user's body and outputs them to the emotion induction module before and after the output of the physical signals from the biostimulation module.

34. (New) A method for inducing emotions based on emotion induction protocols that selectively control visual, auditory, olfactory and tactile stimuli, comprising the steps of:

receiving a selection for a desired emotion by a user and selecting from a plurality of emotion induction protocols an emotion induction protocol configured to induce the desired emotion, wherein each emotion induction protocol is configured to induce a different emotion by combining contents that induce cognitive action of the central nervous system and conditions that induce physiological action of the autonomic nervous system;

receiving one or more biosignals from the user's body to obtain respective biosignal data, and extracting one or more bioparameters from the respective biosignal data;

outputting physical signals to the user to stimulate the user's body based on the emotion induction protocol configured to induce the selected emotion;

after outputting the physical signals, receiving one or more biosignals from the user's body to obtain respective biosignal data, and extracting one or more bioparameters from the respective biosignal data; and

inducing the emotion by changing the emotion induction protocol based on increase/decrease patterns of the bioparameters extracted from the biosignal data, wherein physical signals are outputted to the user to stimulate the user's body with the desired emotion based on the changed emotion induction protocol.